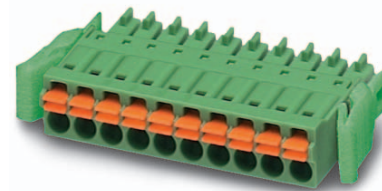


Order No.: 1952021

Type: FMC 1,5/ 2-ST-3,5-RF

Plug component, Push-in spring connection



The figure shows a 10-position version of the product

1 Main features



- | | | | |
|---------------------------|---------------------------|------------------------|---------------------|
| • No. of pos. | 2 | • Nominal current | 8 A |
| • Conductor cross section | 1.5 mm ² | • Nominal voltage | 160 V |
| • Color | green | • Connection direction | 0 ° |
| • Pitch | 3.5 mm | • Type of packaging | packed in cardboard |
| • Connection method | Push-in spring connection | | |

2 Your advantages

- ✓ Time saving push-in connection, tools not required
- ✓ Defined contact force ensures that contact remains stable over the long term
- ✓ Intuitive use through colour coded actuation lever
- ✓ Operation and conductor connection from one direction enable integration into front of device
- ✓ Intuitive locking mechanism prevents accidental disconnection



Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.net/product/1952021

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4 3D model in PDF can be activated (Acrobat Reader only)



1952021 FMC 1,5/ 2-ST-3,5-RF**5 item properties**

Order No.	1952021
Type	FMC 1,5/ 2-ST-3,5-RF
Type of contact	Female connector
Range of articles	FMC 1,5/...-ST-RF
Pitch	3.5 mm
Number of positions	2
Connection method	Push-in spring connection
Locking	Self-locking flange

5.1 Connection capacity

Conductor cross section, solid	0.2 mm ² to 1.5 mm ²
Conductor cross section, flexible	0.2 mm ² to 1.5 mm ²
Conductor cross section AWG/kcmil	24 to 16
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm ² to 1.5 mm ²
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm ² to 0.75 mm ²
Cylindrical gauge a x b / diameter	2.4 mm x 1.5 mm / -
Stripping length	10 mm

5.2 Specifications for ferrules

Ferrules without insulating collar, according to DIN 46228-1	Cross section: 0.25 mm ² ; Length: 5 mm ... 7 mm Cross section: 0.34 mm ² ; Length: 7 mm Cross section: 0.5 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.75 mm ² ; Length: 8 mm ... 10 mm Cross section: 1 mm ² ; Length: 8 mm ... 10 mm Cross section: 1.5 mm ² ; Length: 10 mm
Ferrules with insulating collar, according to DIN 46228-4	Cross section: 0.14 mm ² ; Length: 8 mm Cross section: 0.34 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.5 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.75 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.75 mm ² ; Length: 10 mm

5.3 Material data

Material of metal parts		
Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201	
Contact material	Cu alloy	
Terminal point surface	Sn 4 μm ... 8 μm	
Surface contact area	Sn 4 μm ... 8 μm	
Surface characteristics	hot-dip tin-plated	
Insulating material data	Housing	Actuation element
Insulating material	PA	POM
CTI according to IEC 60112	600	600
Flammability rating according to UL 94	V0	HB
Color	green (6021)	orange (2003)
Glow wire flammability index GWFI according to EN 60695-2-12	850	
Glow wire ignition temperature GWIT according to EN 60695-2-13	775	
Temperature for the ball pressure test according to EN 60695-10-2	125 °C	

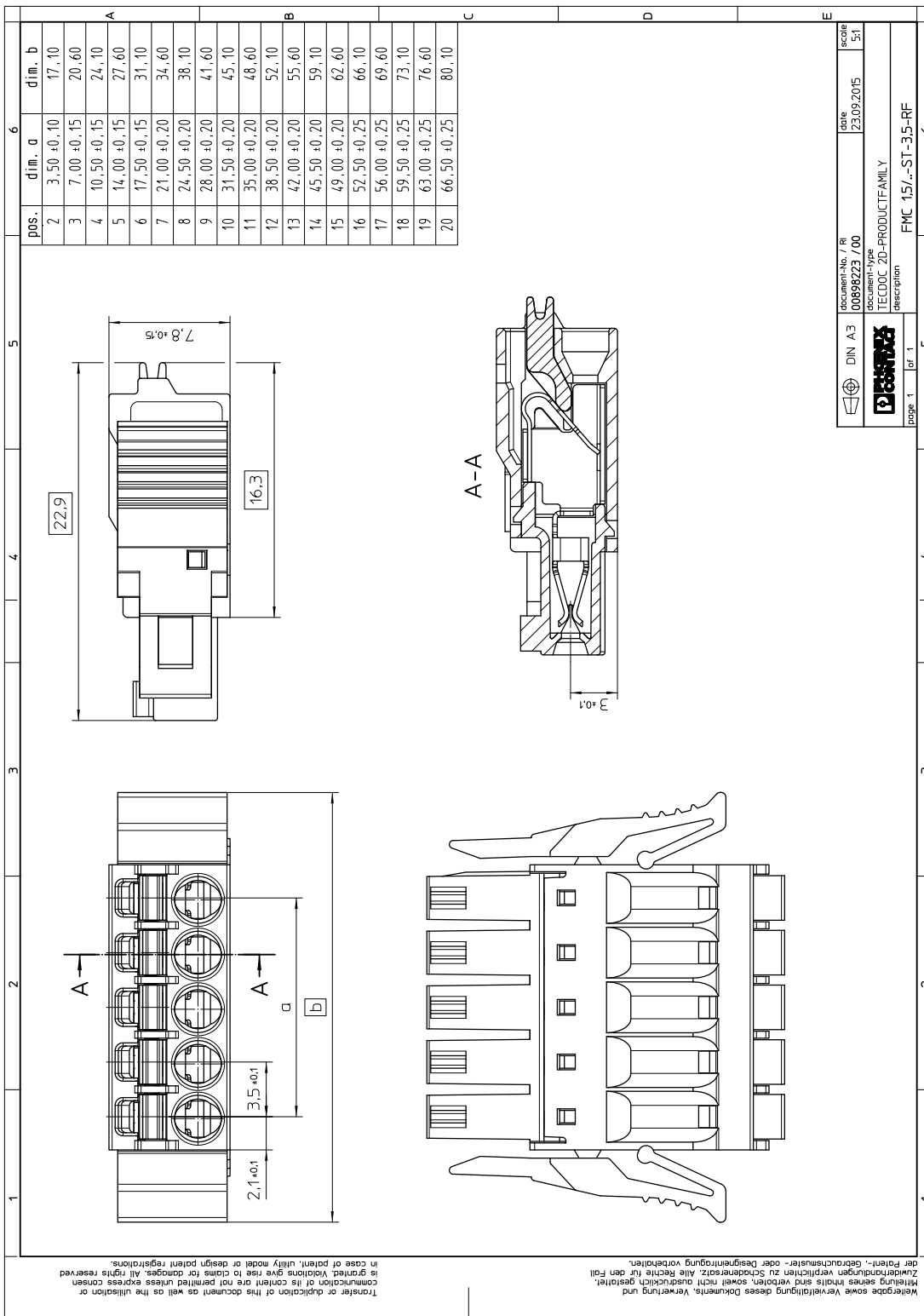
6 Dimensions

6.1 Dimensions for the product

Length	22.9 mm
Width	17.10 mm
Total height	7.8 mm
Dimension a	3.50 mm

1952021 FMC 1,5/ 2-ST-3,5-RF

7 Series drawing



document-No. / Ri	00896223 / 00	date	23.09.2015	scale	1:1
document-type	TECDOC 2D-PRODUCTFAMILY				
description	FMC 1,5/...-ST-3,5-RF				
page 1	of 1				6

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1952021 FMC 1,5/ 2-ST-3,5-RF**8 Packaging information**

Type of packaging	packed in cardboard
Pieces per package	250

9 Application**9.1 General information**

Notes on operation	In accordance with IEC 61984, COMBICON connectors have no switching power (COC). During designated use, they must not be plugged in or disconnected when carrying voltage or under load.
--------------------	--

9.2 Temperature limit values

Ambient temperature (storage/transport)	-40 °C ... 70 °C
Ambient temperature (assembly)	-5 °C ... 100 °C
Ambient temperature (operation)	-40 °C (dependent on the derating curve)

1952021 FMC 1,5/ 2-ST-3,5-RF**10 Mechanical tests**

Mechanical test group A	
Specification	IEC 61984:2008-10
Visual test	Test passed
Specification	IEC 60512-1-1:2002-02
Dimensional test	Test passed
Specification	IEC 60512-1-2:2002-02
Resistance of marking	Test passed
Specification	IEC 60068-2-70:1995-12
Insertion and withdrawal force	Test passed
Specification	IEC 60512-13-2:2006-02
No. of cycles	25
Insertion strength per pos. approx.	5 N
Withdraw strength per pos. approx.	4 N
Polarization and coding	Test passed
Specification	IEC 60512-13-5:2006-02
Test force	20 N
Contact retention in insert	
Specification	
Test force per pos.	

10.1 Termination and connection method

Specification	IEC 60999-1:1999-11
Conductor connection	Test passed
Repeated connection and disconnection	Test passed
Check for damage to conductor or loosening	Test passed

10.2 Pull-out test

Termination and connection method: pull-out test	
Specification	IEC 60999-1:1999-11
Result	Test passed
Conductor cross section/conductor type/tractive force actual value	0.2 mm ² / solid / > 10 N
Conductor cross section/conductor type/tractive force actual value	0.2 mm ² / stranded / > 10 N
Conductor cross section/conductor type/tractive force actual value	1.5 mm ² / solid / > 40 N
Conductor cross section/conductor type/tractive force actual value	1.5 mm ² / stranded / > 40 N
Conductor cross section/conductor type/tractive force actual value	AWG 16 / stranded / > 40 N

1952021 FMC 1,5/ 2-ST-3,5-RF**11 Electrical tests****11.1 Electrical data**

Rated current / conductor cross section	8 A / 1.5 mm ²
Rated insulation voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
Contact resistance	2.7 mΩ
Degree of pollution	2

11.2 Air and creepage distances

Component	Plug component		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112:2003-01)	CTI 600		
Rated insulation voltage	160 V	160 V	320 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	1.5 mm	1.5 mm	1.5 mm
Minimum value of the creepage path requirement in acc. with table	2 mm	1.5 mm	1.6 mm

11.3 Electrical function

Specification	IEC 60999-1:1999-11
Result	Test passed
Voltage drop	Voltage drop (U) after the load ≤ 15 mV
Test current (minimum cross section)	5 A AC
Test current (maximum cross section)	8 A AC
Conductor cross section, flexible	0.2 mm ² to 1.5 mm ²
Conductor cross section, solid	0.2 mm ² to 1.5 mm ²

11.4 Temperature cycles

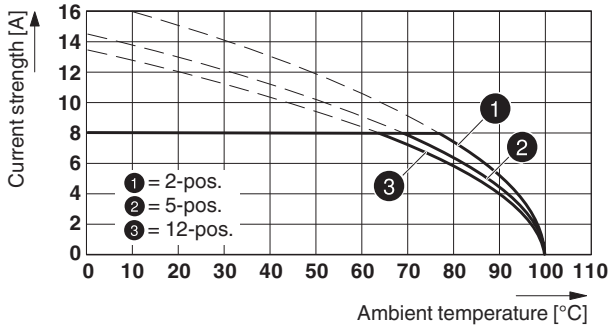
Specification	IEC 60999-1:1999-11
Result	Test passed
Voltage drop	Voltage drop (U) after the load ≤ 22.5 mV or 1.5 x U _{after 24 h} The small value is to be used.
Test current (minimum cross section)	5 A AC
Test current (maximum cross section)	8 A AC
Temperature cycles	192
Conductor cross section, flexible	0.2 mm ² to 1.5 mm ²
Conductor cross section, solid	0.2 mm ² to 1.5 mm ²

1952021 FMC 1,5/ 2-ST-3,5-RF

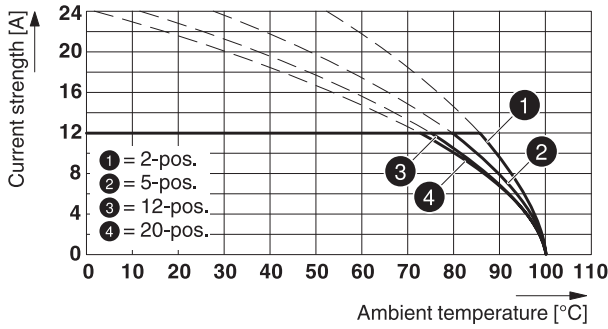
12 Current carrying capacity/derating curves

Specification	IEC 61984:2008-10
Note	Representation based on IEC 60512-5-2:2002-02
Reduction factor	0.8
Number of positions	See diagram
Conductor cross section	1.5 mm ²

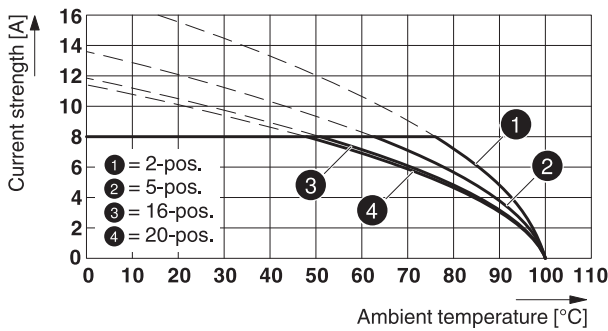
Type: FMC 1,5/...-ST-3,5-RF with IFMC 1,5/...-ST-3,5-RN



Type: FMC 1,5/...-ST-3,5-RF with MCV 1,5/...-G-3,5-RN



Type: FMC 1,5/...-ST-3,5-RF with MCDN 1,5/...-G1-3,5 RNP..THR




1952021 FMC 1,5/ 2-ST-3,5-RF**13 Environmental and durability tests****13.1 Vibration test**


Specification	IEC 60068-2-6:2007-12
Result	Test passed
Frequency	10 - 150 - 10 Hz
Sweep speed	1 octave/min
Amplitude	0.35 mm (10 - 60.1 Hz)
Acceleration	5 g (60.1 - 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis


14 Classification for connectors

Specification	IEC 61984:2008-10
Main features	Connectors without switching capacity (COC)
Construction form	Fixed connectors
Strain relief elements	without strain relief
Connection method	Can be reconnected
Protection against electric shock	not encapsulated - back of hand safety when plugged in
Protective conductor	without PE
Lock	no
Connection method	Screwless terminal points

15 Approvals

VDE Gutachten mit Fertigungsüberwachung 	
mm ² /AWG/kcmil	0.2-1.5
Voltage	160 V
Current	8 A

cULus Recognized 	
Use group	B C
mm ² /AWG/kcmil	24-16 24-16
Voltage	150 V 50 V
Current	8 A 8 A

IECEE CB Scheme 	
mm ² /AWG/kcmil	0.2-1.5
Voltage	160 V
Current	8 A

EAC 	
---	--

1952021 FMC 1,5/ 2-ST-3,5-RF**16 Commercial Data**

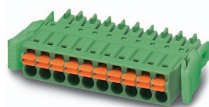
Order No.	1952021
Type	FMC 1,5/ 2-ST-3,5-RF
Pieces per package	250
Net weight	1.63 g
GTIN	4017918942663
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

17 Accessories

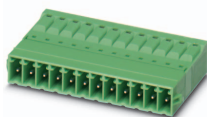
Description	Order No.	Type
	0803883	SK U/2,8 WH:UNBEDRUCKT
	0805030	SK 3,5/2,8:SO
	0803883	SK U/2,8 WH:UNBEDRUCKT
Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm	1051993	B-STIFT
Crimping pliers, for ferrules without insulating collar according to DIN 46228 Part 1 and ferrules with insulating collar according to DIN 46228 Part 4, 0.25 mm ² ... 6.0 mm ² , lateral entry, trapezoidal crimp	1212034	CRIMPFOX 6
Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip	1205037	SZS 0,4X2,5 VDE
	3202465	A 0,25- 5
	3202478	A 0,25- 7
	3009202	A 0,34- 7
	3202481	A 0,5 - 8
	3202494	A 0,5 -10
	3202504	A 0,75- 8
	3200234	A 0,75-10
	3202517	A 1 - 8
	3200250	A 1 -10
	3200276	A 1,5 -10
	3203011	Al 0,14- 8 GY -1000
	3203066	Al 0,34- 8 TQ
	3241129	Al 0,34-10 TQ
	3200014	Al 0,5 - 8 WH
	3201275	Al 0,5 -10 WH
	3200519	Al 0,75- 8 GY
	3201288	Al 0,75-10 GY
	3203037	Al 0,25- 8 YE

1952021 FMC 1,5/ 2-ST-3,5-RF

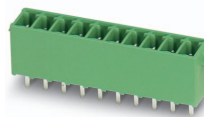
18 Combination tests



FMC 1,5/..-ST-RF



IFMC 1,5/..-ST-RN



MCV 1,5/..-G-RN



MCDN 1,5/..-G1-RN-THR

Specification	IEC 61984	IEC 61984	IEC 61984
Mechanical tests (A)			
Insertion/withdrawal force per position	approx. 5 N / 4 N	approx. 8 N / 6 N	approx. 8 N / 6 N
Polarization when inserted Requirement > 20 N	Test passed	Test passed	Test passed
Endurance tests (B)			
Contact resistance R ₁	2.7 mΩ	1.6 mΩ	2.1 mΩ
Insertion/withdrawal cycles	25	25	25
Contact resistance R ₂	2.8 mΩ	1.8 mΩ	2.4 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	2.95 kV	2.95 kV	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV	1.39 kV	1.39 kV
Insulation resistance Requirements > 5 MΩ	> 4 TΩ	> 0.4 TΩ	> 123 GΩ
Thermal tests (C)			
Tested number of positions	12	20	20
Tested conductor cross section	1.5 mm ²	1.5 mm ²	1.5 mm ²
Test current	8 A AC	8 A	8 A
Upper limiting temperature Requirements < 100°C	Test passed	Test passed	Test passed
Climatic tests (D)			
Test sequence 1: low temperature storage	-40 °C/2 h	-40 °C/2 h	-40 °C/2 h
Test sequence 2: heat storage	100 °C/168 h	100 °C/168 h	100 °C/168 h
Test sequence 3: noxious gas storage (ISO 6988)	0.2 dm ³ SO ₂ on 300 dm ³ / 40 °C/1 cycle	0.2 dm ³ SO ₂ on 300 dm ³ / 40 °C/1 cycle	0.2 dm ³ SO ₂ on 300 dm ³ / 40 °C/1 cycle
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	2.95 kV	2.95 kV	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV	1.39 kV	1.39 kV
Environmental and endurance tests (E)			
Specification	IEC 61984:2008-10	IEC 61984:2008-10	IEC 61984:2008-10
Degree of protection	Finger safety with IP20 test finger	Finger safety with IP20 test finger	Back of hand safety with IP10 access probe